MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2016 / 2017

PCO0165 – INTRODUCTION TO COMPUTER ARCHITECTURE AND OPERATING SYSTEM

(Foundation in Information Technology)

8 OCTOBER 2016
2:30 p.m. – 4:30 p.m.
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This question paper consists of 3 pages (excluding the cover page) with 5 questions only.

2. Answer **ALL** questions. All questions carry equal marks and the distribution of the marks for each question is given.

3. Please write all your answers in the Answer Booklet provided.

Instructions: Answer **ALL** questions. Write your answers in the Answer Booklet.

QUESTION 1 [10 Marks]

a. What is computer architecture? List the **FOUR (4)** architectural attributes.

(5 marks)

b. Processor organization describes the interconnection of the major components of a CPU to the rest of the computer system via the system bus. List and briefly describe **TWO (2)** of the tasks that the processor must perform.

(2 marks)

c. There are five addressing modes used in the 8085 microprocessor. Describe the following addressing modes. Give an example for each of the addressing mode.
   i. Register addressing
   ii. Implied addressing

(3 marks)

QUESTION 2 [10 Marks]

a. Convert the following binary numbers to decimal equivalents. Show computation steps.
   i. 11100001.101_2
   ii. 11010100.011_2

(3 marks)

b. Convert the following hexadecimal notations to their binary equivalents. Show computation steps.
   i. $68D.9A_{16}$
   ii. $7EC.23_{16}$

(3 marks)

c. Convert the following decimal number notations to their hexadecimal equivalents. Show computation steps.
   i. 2364_{10}
   ii. 507_{10}

(4 marks)

QUESTION 3 [10 Marks]

a. Assume that you have a logic gate shown in **Figure 1** with three inputs, X, Y and Z. Determine the output (E) for the following questions.
   i. X = 1, Y = 0, Z = 1
   ii. X = 0, Y = 0, Z = 1

(2 marks)

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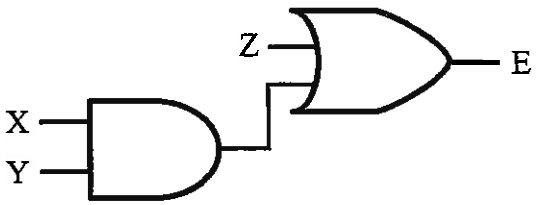

Figure 1

b. Calculate the subtraction arithmetic operation of the following unsigned binary numbers. Show computation steps.
   i. 11101100 - 01010101
   ii. 10010110 - 01101101

(3 marks)

c. Solve the following addition operations using the two's complement addition in 5-bit for signed integer. Show computation steps.
   i. 4 + (-8)
   ii. (-3) + (9)

(3 marks)

d. Solve the subtraction operation (-9) - (-5) using the two's complement subtraction in 4-bit for signed integer. Show computation steps.

(2 marks)

QUESTION 4 [10 Marks]

Let the memory location 0800H = F9H, 0801H = 3BH and 0802H = 8AH. Write an assembly language to add the contents of the memory locations 0800H, 0801H and 0802H by using:

a. Direct addressing mode
b. Indirect addressing mode

Store the result of the operation to memory location 0803H.

(10 marks)

QUESTION 5 [10 Marks]

a. What is distributed operating system?

(2 marks)

b. In operating system, a process is a program in execution. As a process executes, it changes state. The state of a process is defined as the current activity of the process. List and briefly describe **THREE (3)** of the states that a process can have at a time in process management.

(3 marks)

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c. Describe the function of photo viewer utility in Windows operating system.

(2 marks)

d. The most important parts where file systems are likely to be different are based on the structure of the directories and the connection between them. Briefly describe **THREE (3)** of the common directory structures used in file system of operating system.

(3 marks)

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